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RESOURCE CONSERVATION AND RECOVERY ACT COMPLIANCE INVESTIGATION

Chevron Products Company – Hawaii Refinery
Kapolei, Hawaii
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NEIC

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INTRODUCTION

At the request of U.S. Environmental Protection Agency (EPA) Region 9, EPA's National Enforcement Investigations Center (NEIC) conducted a Resource Conservation and Recovery Act (RCRA) compliance investigation of the Chevron Products Company, Hawaii Refinery (Chevron Hawaii) located at 91-480 Malakole Street in Kapolei, Hawaii. Chevron Hawaii's operations are subject to environmental permits and regulations administered by the EPA and the Hawaii State Department of Health (HDOH).

FACILITY BACKGROUND

Chevron Hawaii is a crude oil refinery with a refining capacity of approximately 50,000 barrels/day. The facility covers approximately 252 acres. It has about 250 employees, and the hours of operation are 24 hours a day, year round.

Chevron Hawaii (EPA ID No. HIT160010005) is classified as a large quantity generator of hazardous waste with HDOH. Typical waste streams generated on-site include: heat exchanger bundle cleaning sludge (EPA hazardous waste code K050), refinery sludge (EPA hazardous waste code F037), benzene waste from tank bottoms and carbon recovery units (EPA hazardous waste code D018), chromium (EPA hazardous waste code D007) and arsenic (EPA hazardous waste code D004) waste from boiler ash, mercury debris (EPA hazardous waste code D009), and ignitable and/or lead-contaminated paint waste (EPA hazardous waste codes D001 and D008).

ON-SITE INSPECTION SUMMARY

NEIC conducted the on-site inspection of Chevron Hawaii February 24 through March 2, 2016. Credentials were presented to Alice Armstrong, Chevron Hawaii environmental specialist. During the on-site inspection, Chevron Hawaii representatives provided detailed process descriptions, process area walkthroughs, and documentation/records pertaining to the investigation. An exit conference between regulatory and facility personnel was conducted at the conclusion of the on-site inspection. NEIC inspectors emphasized that final determinations would be made in conjunction with EPA Region 9 personnel. Photographs collected during the NEIC on-site inspection can be found in **Appendix A**.

INSPECTION ACTIVITIES

The inspection was conducted February 24 through March 2, 2016. The RCRA inspection team consisted of: Jackie Vega, Lorna Goodnight, and Linda TeKrony from NEIC and Richard Francis and Sharon Lin from EPA Region 9. Various representatives from HDOH also attended the inspection.

Chevron Hawaii is a large quantity generator (LQG) of hazardous waste (EPA ID No. HIT160010005). NEIC's objectives during the inspection were to determine the facility's compliance with hazardous waste characterization, handling, and management procedures, including any potential disposal of wastes in surface impoundments.

PROCESS DESCRIPTIONS

Chevron Hawaii receives various crude oils delivered by marine tankers and produces a wide variety of products. The marine mooring facility that services the refinery is located approximately 1.5 miles offshore. Unit operations at the refinery include: crude unit, fluid catalytic cracker (FCC) unit, hydrogen manufacturing plant, hydrogenation plant, dimersol plant, isomerization plant, alkylation, acid manufacturing, boiler plant, cogeneration plant, blending and shipping,

Crude Unit

Crude oil processed at the refinery is transferred from the marine tankers via pipline to the blending and shipping area, where it is placed in storage tanks. [redacted]. From the storage tanks the crude oil is then pumped to the crude unit.

The crude feed enters the crude unit and is routed to the primary feed pump. The primary feed exchangers increase the temperature of the crude feed. To minimize fouling and corrosion of equipment, brine and inorganic salts are removed in the desalter. The desalter reduces the velocity of the crude oil flow and, with aid of electrical grids, separates water from the crude. Most of the solids in the crude are soluble in water, so they leave the desalter with the water phase which is discharged to the process sewer.

Crude oil from the desalter is routed through a preheat exchanger to a flash drum, where the light hydrocarbons are vaporized, and then routed directly to the atmospheric column (bypassing the atmospheric furnace). The crude oil from the bottom of the flash drum is routed through the secondary preheat exchangers. The crude oil exiting the preheat exchangers is routed through the atmospheric furnace into the atmospheric column.

In the atmospheric column, the hot crude oil vaporizes and several product streams are drawn off: atmospheric overhead (material lighter than jet fuel, which includes whole straight run naphtha and light ends such as methane, ethane, propane, and butane), first side cut (commercial jet fuels), third side cut (low sulfur diesel fuel), fourth side cut (atmospheric gas oil, which is a FCC feed), and bottoms (feed to the vacuum column).

Atmospheric column bottoms are routed through the vacuum furnace for heating. After heating, the atmospheric tower bottoms are sent to the vacuum tower where vacuum gas oil (VGO) (feed to the FCC unit) and residual product (residuum) are produced. The residuum is routed through heat exchangers to storage, where it is blended into fuel oil or a road asphalt base. Residuum may also be used as a feed to the FCC unit.

FCC Unit

The purpose of the FCC unit is to convert material from the crude unit into gasoline blend components. Additionally, the FCC unit produces refinery fuel gas, propane and propylene, butane and butylene, light cycle oil, and fractionator bottoms.

The FCC unit feed is converted into higher valued products by “cracking” the heavier hydrocarbon molecules into lighter molecules by contacting the feed with an air-assisted circulating catalyst at relatively high temperatures. The process of cracking the molecules results in the formation of coke on the catalyst. The coke inhibits the cracking process, so it is burned off to restore catalyst activity. The flue gas exiting the FCC unit is mixed with particles of catalyst and is routed through cyclones and a four-cell electrostatic precipitator to remove the particulate matter.

Products are routed to the fractionator and separated. The gas recovery unit separates gaseous products from the fractionator and removes hydrogen sulfide which is sent to the acid plant.

Hydrogen Manufacturing Plant

The purpose of the hydrogen manufacturing plant is to convert butane, propane, and lighter hydrocarbons into hydrogen and carbon dioxide. The hydrogen is used in the hydrogenation, dimersol, and isomerization processes. The carbon dioxide is vented to the atmosphere. The hydrogen manufacturing process separates the hydrogen atoms from hydrocarbon molecules in a catalytic reforming furnace.

Hydrogenation Plant

The hydrogenation plant saturates butylene with hydrogen to form saturated butane. The butane is fed to the isomerization process or used for gasoline blending. The hydrogenation process uses a fixed-bed reactor with a hydrogen-rich atmosphere.

Dimersol Plant

The dimersol plant converts propylene into dimate (hexene isomers), a gasoline blend component. The dimate is routed to a storage tank for blending. Propylene feed is supplied from the FCC unit and is converted in the dimersol reactor.

Isomerization Plant

The purpose of the isomerization plant is to convert normal butane into isobutane. Isobutane is one of the two feed components required for the alkylation process. The isomerization process uses a fixed-bed reactor with a catalyst of aluminum beads. The feed stream is dehydrated upstream of the isomerization process, as water will deactivate the catalyst. The products of the isomerization process are fed to the alkylation plant.

Alkylation

In the alkylation process, isobutane from the isomerization plant is joined with propylene or butylene to form alkylate, a gasoline blending component. This reaction is catalyzed by high-concentration sulfuric acid. The reaction is exothermic, and the heat of reaction is captured by heat exchangers.

In the feed section of the alkylation process, olefins are mixed with the isobutane. The stream is sent to the feed coalescer to remove water before the stream is fed to the contactors. The feed coalescer contains packing, which facilitates the removal of free water. The removed water is collected in the boot of the coalescer and is discharged to the oily water sewer.

The flow from the coalescer is split to feed three contactors operated in parallel. In the contactors, the feed mixes with concentrated sulfuric acid. The sulfuric acid acts as a catalyst to the alkylation reaction. A mixer is used to completely mix the olefin stream and the sulfuric acid.

Acid settlers located after the contactors are used to separate the hydrocarbons from the sulfuric acid. The sulfuric acid settles to the bottom of the acid settler, where it is recycled back to the contactors. The hydrocarbons are pumped to the reaction effluent treating section.

The reaction effluent (containing alkylate, butane, and isobutane) from the acid settlers is treated in the acid coelescer to remove most of the entrained acid in the stream. The removed acid is collected in the boot of the acid coelescer and is manually drained to the spent acid drum or the neutralizing pit. The reaction effluent then flows to the caustic washer, which neutralizes any remaining entrained acid. Caustic and the reaction effluent mix and flow through a static mixer and then into the caustic washer. The caustic washer allows residence time so the caustic and hydrocarbons in the reaction effluent can separate. The caustic is drawn off the bottom of the caustic washer and returned to the loop of circulating caustic in this area. The hydrocarbon stream exits the top of the caustic washer and flows to the water washer, which removes entrained caustic. The water and hydrocarbons mix before entering the water washer, which provides residence time for the water and hydrocarbons to separate. The hydrocarbons exit the water washer and flow to the contactor effluent coalescer, where any entrained water is separated from the hydrocarbons. The water is collected in the boot of the contactor effluent coalescer and is manually drained to the degasser.

The hydrocarbon stream is further processed through three distillation columns: deisobutanizer, debutanizer, and alkylate rerun. The deisobutanizer fractionates the feed into two streams. The overhead stream is isobutane, which is used in the feed section of the alkylation plant. The bottoms stream consists of normal butane and alkylate and flows to the debutanizer. The debutanizer fractionates the bottoms stream into an overhead butane stream and a bottoms whole alkylate stream. The bottoms whole alkylate stream is fed to the alkylate rerun column, where it is split into an overhead light alkylate stream and a bottoms heavy alkylate stream. The light alkylate is used in the blending of gasoline, and the heavy alkylate is used in the blending of jet fuel.

Amine Regeneration and Acid Manufacturing

The acid manufacturing area includes sulfuric acid manufacturing (acid plant), acid storage, and amine processing facilities. The amine plant is an amine regeneration system used to recover hydrogen sulfide. The acid plant manufactures sulfuric acid from feedstocks available in the refinery.

The principal feeds to the acid plant are spent acid from the alkylation plant and hydrogen sulfide gas from the amine regeneration system. The acid plant produces acid through decomposition of spent acid and combustion of hydrogen sulfide gas to form sulfur dioxide, which is then oxidized to form sulfur trioxide. Finally, the sulfur trioxide is absorbed in a strong sulfuric acid solution to form sulfuric acid. Residual unconverted sulfur dioxide is emitted through the absorber stack. Sulfuric acid is reused in the refinery in the alkylation plant. At the time of the NEIC inspection, Chevron Hawaii was supplementing the sulfuric acid produced in the acid plant with fresh acid obtained from off-site.

Boiler Plant

Steam is critical to the refinery process, and 600-pound steam is used throughout the facility. Steam is supplied by three boilers in the boiler plant. Both refinery fuel gas and fuel oil are used as fuel in the boilers.

Cogeneration Plant

Steam is also supplied by three gas turbines with heat recovery steam generators located in the cogeneration plant. These units are equipped with low-nitrogen oxides (NO_x) burners and water injection to control NO_x emissions. Refinery fuel gas and whole straight run naphtha are used as fuels in the cogeneration turbines. Only refinery fuel gas is combusted in the heat recovery steam generators.

Blending and Shipping

The blending and shipping area includes the refinery tank farm, liquified petroleum gas (LPG) handling system, and truck loading racks.

The refinery tank farm consists of storage tanks for the following hydrocarbon liquids: crude oil, refinery products, gasoline blending components, and recovered oil.

Typically, products from the refinery are shipped off-site via pipeline. If the pipeline is unavailable, the truck loading rack will be used.

Wastewater Treatment Plant

The on-site wastewater treatment plant (WWTP) treats process wastewater, stormwater, and process area sampling waste (**Figure 1**). The majority of the flow to the WWTP is desalter effluent. Waste streams undergo various treatments to recover any oil before entering oxidation (ox) pond 1, where all wastewater streams combine and flow through a series of ponds and filters before discharging to the Pacific Ocean. A few streams, such as cooling water and steam generator wastewaters, discharge directly to ox pond 1.

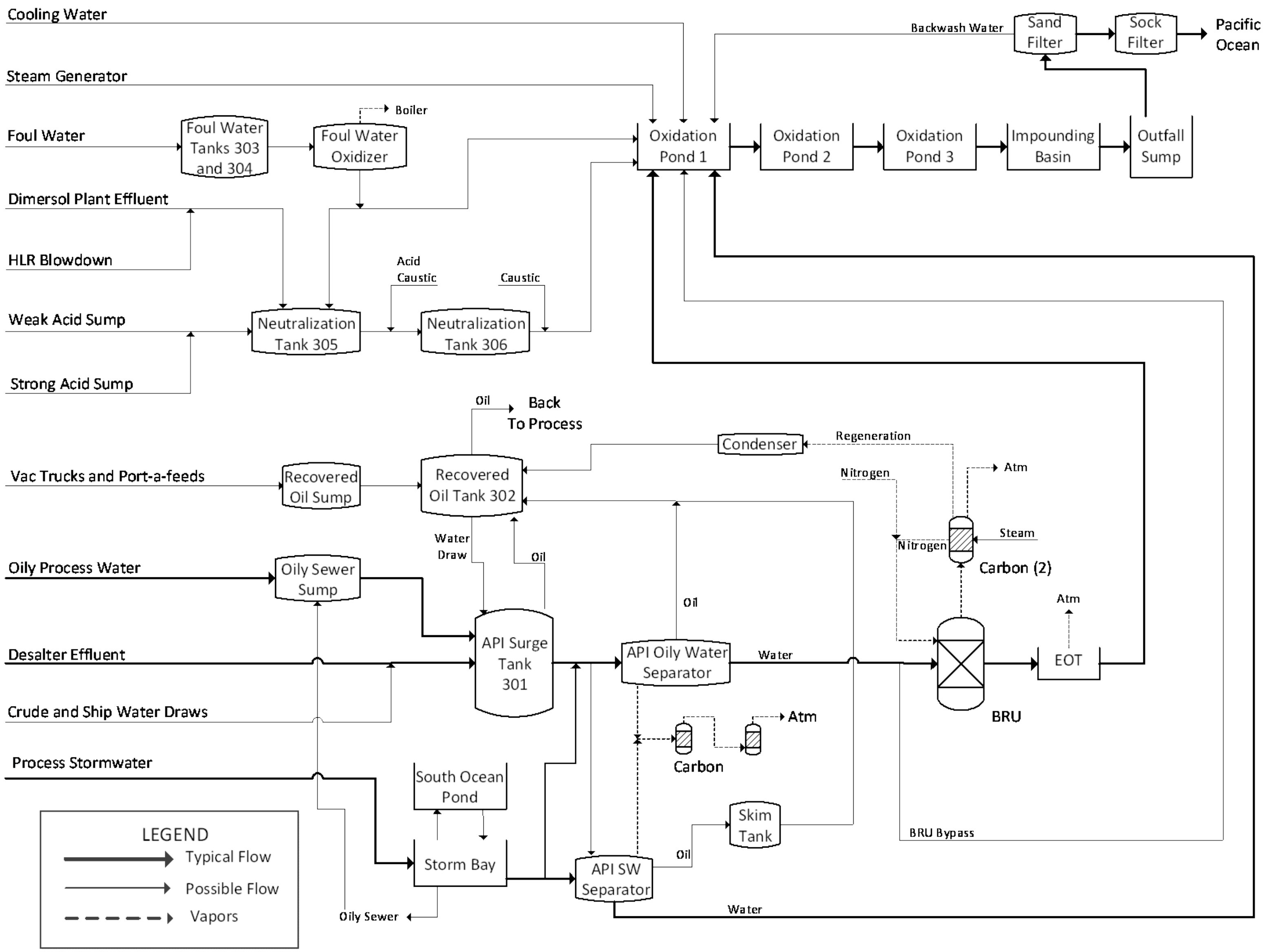

Figure 1. Wastewater treatment plant.

Foul Water Oxidation

Wastewater containing ammonia, sulfides, and hydrocarbons is routed through foul water tanks 303 and 304 to the foul water oxidizer, before discharging either to ox pond 1 or to neutralization tank 305 for pH adjustment before discharging to ox pond 1. Vent streams, primarily containing ammonia, from the foul water oxidizer go to one of the on-site boilers.

Neutralization

Wastewater from the dimersol plant (primarily stripper effluent) and HLR blowdown are combined before undergoing pH adjustment in neutralization tanks 305 and 306. The strong acid sump collects wastes from sampling and maintenance operations on the acid pump, and the weak acid sump receives wastewater blowdowns from the acid wash column in the acid plant; the contents of both acid sumps are pumped to neutralization tank 305. Wastewaters are neutralized by acid or caustic addition to the line between tanks 305 and 306. The pH is monitored at the outlet of tank 306, and caustic may be added to reach a final pH of around 7, before the wastewater is discharged to ox pond 1.

Process Wastewater/Oil Separation

Both process wastewaters and stormwaters that potentially contain hydrocarbons are routed to one of two American Petroleum Institute (API) oil/water separators, where oil is recovered and the resulting wastewater is treated. The two API separators can be used interchangeably if one is down for maintenance.

Oily process water enters the WWTP through the oily sewer sump and is collected in API surge tank 301 before the first treatment step in the API oily water separator. Desalter effluent and water draws from crude tanks and ships are also collected in API surge tank 301 before treatment in the API oily water separator. Skimmed oil from the API oily water separator and any separated oil from API surge tank 301 are collected in recovered oil tank 302. The contents of vacuum trucks and port-a-feeds, including the light oil generated in the on-site laboratory, feed the recovered oil sump, whose contents also flow to recovered oil tank 302. Water and oil further separate in tank 302. The wastewater discharges to API surge tank 301 for treatment through the system, and oil is returned to the refining process through the crude tanks. The contents of tank 302 are typically half water and half oil.

Wastewaters from the API oily water separator continue to the benzene recovery unit (BRU), where nitrogen gas is recirculated to strip benzene from the wastewaters. The BRU is equipped with two strippers, but only one is used at a time. Gaseous hydrocarbons generated during nitrogen stripping are vented to a carbon adsorber. The carbon adsorber is regenerated once a day by applying steam to the carbon. During carbon regeneration, volatiles vent to a condenser that feeds recovered oil tank 302. Wastewaters from the BRU flow through the effluent oxidation tank (EOT) before entering ox pond 1. The EOT is used to equalize the system, mixes the flow through aeration, and is open to the atmosphere. Wastewaters at the EOT are monitored monthly for benzene; additional monitoring is performed during BRU shutdowns. Wastewaters are then treated by aggressive biological oxidation in ponds. During times of planned maintenance, the BRU is bypassed and wastewater from the API oily water separator is discharged directly to ox pond 1.

Stormwater/Oil Separation

Stormwater that has contacted process areas throughout the facility is treated in the WWTP. The stormwater is first collected in the storm bay, an open concrete sump, where the pH is monitored. Oil in the storm bay is manually pumped through the oily sewer to the oily sewer sump for treatment as needed. The storm bay is equipped with three level-controlled automatic pumps. The first two pumps send wastewaters to the API stormwater (SW) separator, and the third, which is activated during times of high-volume flow, such as storm events, sends wastewaters to the south ocean pond. Wastewaters from the south ocean pond are returned to the storm bay once capacity is available for treatment through the API SW separator. Oil from the API SW separator is discharged through a skim tank to recovered oil tank 302, and the water is discharged to ox pond 1.

Both API separators vent to two carbon canisters operated in series, with the final canister venting to the atmosphere. The carbon canisters are monitored monthly, and when 5 parts per million (ppm) of volatile organic compounds (VOCs) are observed in the outlet vent stream, the canister is replaced and the spent carbon is sent off-site for regeneration.

Oxidation Ponds

After undergoing various treatments in the WWTP, all wastewaters collect in ox pond 1, which is equipped with three aerators; the wastewaters then are discharged to ox ponds 2 and 3, each equipped with one aerator. Each oxidation pond has a design depth of 10 feet. Wastewaters from ox pond 3 flow through the impounding basin, outfall sump, a sand filter, and a sock filter before final discharge though a pipe that reaches 1,700 feet into the Pacific Ocean. The sand filter is cleaned with reverse water flow, and backwash water is discharged to ox pond 1. A sample is collected from the outfall sump and analyzed to show compliance with Chevron Hawaii's National Pollutant Discharge Elimination System (NPDES) permit.

SITE OBSERVATIONS

During the on-site inspection, NEIC inspectors visually inspected the following areas: less-than-90-day accumulation area for waste; used oil tank at the maintenance shop; and wastewater treatment system, including waste generation areas. NEIC reviewed the following documents:

manifests and associated land disposal restriction (LDR) notifications, waste profiles, less-than-90-day accumulation area inspection records, waste determination documentation, and wastewater analytical records.

Chevron Hawaii operates one less-than-90-day accumulation area; 55-gallon drums are dropped off at the waste storage area (WSA) into a plastic-lined receiving area. If the workers in the area know the contents of the drum, the drum is labeled and moved into the appropriate accumulation area: hazardous or nonhazardous. If the contents of the drum is unknown, then a sample is collected and the drum is moved into the second plastic-lined area pending analysis. The nonhazardous waste accumulation area is a third plastic-lined area. A fourth plastic-lined area is designated for oil-impacted soils. The less-than-90-day accumulation area consists of a coated concrete-lined area that is surrounded by a chain-link fence. Universal waste is also stored within the less-than-90-day accumulation fenced area.

The maintenance shop operates one square, metal used oil tank. At the time of the NEIC inspection, the tank was labeled as “Used Oil.” When pumps are taken out of service, the oil from the pump is drained on-site, in the process area, when feasible. The used oil from the pump is collected in pail that is transported to the used oil tank located at the maintenance shop. If it is not feasible to drain the oil from the pump in the processing area, the pump is transported to the maintenance shop and the used oil is drained into a pail. The used oil in the pails are emptied into the used oil tank. A vacuum truck is used to remove the used oil from the tank and transport it to the crude sump, where it is returned to the refinery for processing.

Chevron Hawaii generates aerosol cans in the shops, which are collected in a 55-gallon drum at the maintenance shop. Earlier on March 1, 2016, NEIC inspectors observed that Chevron Hawaii was treating this drum as a less-than-90-day accumulation drum. The facility was in the process of purchasing and installing a new aerosol can puncture mechanism on a drum. The two main types of aerosol cans generated contain paint and electric motor cleaner. Later on March 1, 2016, Chevron Hawaii installed the aerosol can puncture mechanism on a new drum, which was labeled as “Hazardous Waste” and dated March 1, 2016.

SUMMARY OF FINDINGS AND OBSERVATIONS

Findings identified by NEIC during the RCRA investigation are summarized in the table below. These findings are linked to specific supporting documents that can be found in individual appendices to this table. These findings are categorized as potential areas of noncompliance (AON) and as areas of concern (AOC). Areas of concern are inspection observations of potential problems or activities that could impact the environment or result in future or current noncompliance. EPA Region 9 will assess the applicability of regulatory requirements based on its review of this report and other technical, regulatory, and facility information.

Table 1. SUMMARY OF OBSERVATIONS
Chevron Products Company – Hawaii Refinery
Kapolei, Hawaii

#	Regulatory Citation	Findings/Supporting Notes	Evidence
POTENTIAL AREAS OF NONCOMPLIANCE			
1.	**Hawaii Environment Laws and Regulations, Hawaii Revised Statutes (HRS) 11-270-1(c) [40 Code of Federal Regulations (CFR) § 270.1(c)]** – *…HRS requires a permit for the "treatment," "storage," and "disposal" of any "hazardous waste" as identified or listed in chapter 11-261. The terms "treatment," "storage," "disposal," and "hazardous waste" are defined in section 11-270-2. Owners and operators of hazardous waste management units must have permits during the active life (including the closure period) of the unit…*	**Finding:** Chevron Hawaii discharged wastewater that was characteristic for benzene (EPA hazardous waste code D018) into an on-site, unlined surface impoundment without obtaining a RCRA permit. **Notes:** Chevron Hawaii discharged wastewater from the oily water API oil/water separator directly into ox pond 1 on occasions when the benzene recovery unit was bypassed (**Appendix A**, photographs IMGP0028, 0031, 0032, 0033, and 0051). During 2014, the BRU was bypassed on three occasions, as documented in Appendix I of the 2014 4th Quarter Benzene Waste Operations NESHAPS (BWON) Report (**Appendix B**). Each month, Chevron Hawaii collects three samples for benzene analysis at selected locations for its BWON program. On occasions when the BRU is bypassed, Chevron Hawaii conducts additional sampling. Chevron Hawaii uses the results of the analyses of this additional sampling to estimate the benzene released during these bypasses for its total annual benzene (TAB) report each year (**Appendix C**). According to Jacob Graham, Chevron Hawaii environmental specialist, the "BRU IN" data would represent the benzene in the waste stream discharged to ox pond 1 during the bypass events. The BRU	**Appendix A** – NEIC Photographs **Appendix B** – 2014 4th Quarter BWON Report **Appendix C** – 2014 TAB Report **Appendix D** – February 16, 2014, Analytical Report (CBI) **Appendix E** – September 16, 2014, Analytical Report (CBI) **Appendix F** – October 19, 2014, Analytical Report (CBI)

Table 1. SUMMARY OF OBSERVATIONS
Chevron Products Company – Hawaii Refinery
Kapolei, Hawaii

#	Regulatory Citation	Findings/Supporting Notes	Evidence
		bypass events and corresponding data are summarized below. <table><tr><th>Date of BRU Bypass</th><th colspan="3">Benzene (milligrams per liter [mg/L])</th><th>Reason for Bypass</th></tr><tr><td>2/16/14</td><td>5.8</td><td>6.1*</td><td>5.6</td><td>maintenance</td></tr><tr><td>9/16/14</td><td>6.8</td><td>6.3</td><td>6.1</td><td>maintenance</td></tr><tr><td>10/19/14</td><td>4.6</td><td>4.1</td><td>3.5</td><td>hurricane</td></tr><tr><td colspan="5">* 5.1 was reported in the BWON report, but the analytical report showed 6.1 mg/L.</td></tr></table> The benzene characteristic limit is 0.5 mg/L TCLP. The analytical reports for these events are included in **Appendix D, Appendix E,** and **Appendix F**.	
2.	**HRS 11-262-11 [40 CFR § 262.11] –** *A person who generates a solid waste, as defined in section 11-261-2, must determine if that waste is a hazardous waste using the following method:* *(a) He should first determine if the waste is excluded from regulation under section 11-261-4.* *(b) He must then determine if the waste is listed as a hazardous waste in subchapter D of chapter 11-261.*	**Finding:** Chevron Hawaii has not made hazardous waste determinations for the following wastewater streams that are discharged to surface impoundments: • Wastewater from the stormwater API oil/water separator to ox pond 1 (**Appendix A**, photographs IMGP0013 – 0016 and IMGP0039) • Wastewater from the storm bay sump to the south ocean pond (**Appendix A**, photographs IMGP0013 – 0016 and IMGP0035) **Notes:** • Wastewater from the stormwater API oil/water separator to ox pond 1 – Process area stormwater from throughout the refinery collects in the stormwater sewer, which flows to the storm bay sump. The sump has three pumps, two of which pump the water to the stormwater API oil/water separator. Oil from the stormwater API oil/water separator discharges through a skim tank to recovered oil tank 302, and water discharges to ox pond 1. This wastewater comes	**Appendix A** – NEIC Photographs

Table 1. SUMMARY OF OBSERVATIONS
Chevron Products Company – Hawaii Refinery
Kapolei, Hawaii

#	Regulatory Citation	Findings/Supporting Notes	Evidence
		from process areas and may contain benzene. Chevron Hawaii has not sampled the water stream prior to its discharge to ox pond 1. • Wastewater from the storm bay sump to the south ocean pond – When the storm bay sump is receiving a large amount of storm water, the third pump activates, sending the wastewater to the south ocean pond. This wastewater comes from process areas and may contain benzene. Chevron Hawaii has not sampled the waste stream prior to its discharge to the south ocean pond. During the NEIC inspection, the south ocean pond was empty.	
3.	**HRS 11-262-11 [40 CFR § 262.11] –** *A person who generates a solid waste, as defined in section 11-261-2, must determine if that waste is a hazardous waste using the following method:* *(a) He should first determine if the waste is excluded from regulation under section 11-261-4.* *(b) He must then determine if the waste is listed as a hazardous waste in subchapter D of chapter 11-261.* **40 CFR § 261.31 –** *F037 – Petroleum refinery primary oil/water/solids separation sludge – Any sludge generated from the gravitational separation of oil/water/solids during the storage or treatment of process wastewaters and oil cooling wastewaters from petroleum refineries. Such sludges include, but are not limited to, those generated in…stormwater units receiving dry weather flow. Sludge generated in stormwater units that do not receive dry weather flow…are not included in this listing.*	**Finding:** Chevron Hawaii did not maintain adequate documentation to show that wastewater was pumped to the south ocean pond, an unlined surface impoundment, only during wet weather flow. **Notes:** • Sludge generated from the gravitational separation of oil/water/solids during the storage or treatment of process wastewaters at petroleum refineries is a listed hazardous waste (hazardous waste number F037). Chevron Hawaii is using an exemption from the listing for stormwater units that do not receive dry weather flow. According to Chevron Hawaii personnel, the system is designed so that the pump that leads from the storm bay sump to the south ocean pond would only operate during times of high-volume flow, such as storm events. However, the digital control system at the refinery did not record when the pump was activated. Documentation of when the storm bay sump is pumped to the south ocean pond is needed to ensure that the exemption is being met. During the NEIC inspection, the south ocean pond was	**Appendix A** – NEIC Photographs

Table 1. SUMMARY OF OBSERVATIONS
Chevron Products Company – Hawaii Refinery
Kapolei, Hawaii

#	Regulatory Citation	Findings/Supporting Notes	Evidence
		empty. (**Appendix A**, photographs IMGP0013 – 0016 and IMGP0035)	
4.	**HRS 11-262-11 [40 CFR § 262.11] –** *A person who generates a solid waste, as defined in section 11-261-2, must determine if that waste is a hazardous waste using the following method:* *(a) He should first determine if the waste is excluded from regulation under section 11-261-4.* *(b) He must then determine if the waste is listed as a hazardous waste in subchapter D of chapter 11-261.*	**Finding:** Chevron Hawaii did not make an accurate waste determination on some heat exchanger bundle cleaning sludge. **Notes:** Chevron Hawaii generates heat exchanger bundle cleaning sludge at the blast pad. The facility operates heat exchangers that use cooling water as the cooling medium. The sludge that is generated from these exchangers has been determined to meet the definition of EPA hazardous waste code K050, heat exchanger bundle cleaning sludge (**Appendix G**); however, Chevron Hawaii has determined that sludge generated from the cleaning of exchangers that use hydrocarbon-to-hydrocarbon heat transfer, or that use steam as the heat transfer fluid, do not generate listed hazardous waste (EPA hazardous waste code K050). Chevron Hawaii conducted an unplanned shutdown (second quarter 2015) of the crude unit, and heat exchanger E-5118A was cleaned. Before the project began, a safety/environmental matrix table was completed, which included safety and environmental recommendations (**Appendix H**). The matrix table identified the sludge to be generated from E-5118A as EPA hazardous waste code K050. The project matrix was provided to the shutdown team before the project began. The sludge generated from cleaning heat exchanger E-5118A was shipped off-site to US Ecology Inc., located in Beatty, Nevada, as a nonhazardous waste identified as "Non-DOT Regulated Material (Sediment)" (**Appendix I**).	**Appendix G –** RCRA Online Memo Regarding the Definition of RCRA Waste K050 **Appendix H** – Safety/Environmental Matrix Including E-5118A Cleaning (CBI) **Appendix I** – Shipping Document ZZ00393311 (CBI)

Table 1. SUMMARY OF OBSERVATIONS
Chevron Products Company – Hawaii Refinery
Kapolei, Hawaii

#	Regulatory Citation	Findings/Supporting Notes	Evidence
5.	**HRS 11-262-11 [40 CFR § 262.11] –** *A person who generates a solid waste, as defined in section 11-261-2, must determine if that waste is a hazardous waste using the following method:* *(a) He should first determine if the waste is excluded from regulation under section 11-261-4.* *(b) He must then determine if the waste is listed as a hazardous waste in subchapter D of chapter 11-261.*	**Finding:** Chevron Hawaii did not make an appropriate hazardous waste determination for spent carbon that was sent to a carbon regeneration facility as a nonhazardous waste. **Notes:** Carbon cannisters are used in the wastewater treatment plant to treat vapors from the oily water from the API oil/water separator and from the recovered oil sump. When the carbon is determined to be spent, it is shipped off-site to a carbon regeneration facility. As explained in its April 8, 2016, email response to NEIC question 12 (**Appendix J**), Chevron Hawaii determined that the spent carbon is not a solid waste because it is regenerated, based on information supplied by the receiving facility. The profile questionnaire from the receiving facility indicated that the spent carbon would be exempt if it were a sludge that was being regenerated (**Appendix K**). The spent carbon is sent on a bill of lading to the carbon regeneration facility. Chevron Hawaii has tested the carbon for metals but not for volatile organic compounds, the contaminants that the carbon is meant to control. According to the definition of a carbon regeneration unit at 40 CFR § 260.10 and the February 21, 1991, *Federal Register* (56 *FR* 7200), a carbon regeneration unit is a thermal treatment unit and is not an exempt reclamation unit. In carbon regeneration, the carbon is regenerated, not the hazardous waste contained in the carbon. Therefore, the reclamation exemption would not apply to the waste and the spent carbon is not exempt from hazardous waste managment regulations. On February 11, 2016, Chevron Hawaii manifested spent carbon to Veolia in Azusa, California, as a	**Appendix J –** April 8, 2016, E-mail Response to Outstanding Questions (CBI) **Appendix K –** Spent Carbon Profile Questionnaire (CBI) **Appendix L –** February 11, 2016, Manifest for Spent Carbon

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Chevron Products Company – Hawaii Refinery
Kapolei, Hawaii

#	Regulatory Citation	Findings/Supporting Notes	Evidence
		hazardous waste characteristic for benzene, hazardous waste code D018 (**Appendix L**). The spent carbon was being sent for fuel blending for energy recovery.	
6.	**HRS 11-262-20(a) [CFR § 262.20(a)(1)] –** *A generator who transports, or offers for transportation, hazardous waste for offsite treatment, storage, or disposal must prepare a Manifest OMB control number 2050-0039 on EPA form 8700-22, and, if necessary, EPA form 8700-22A, according to the instructions included in the Appendix to this chapter.* **Appendix to Part 262, Item 13. Waste Codes (adopted by reference by Hawaii)** – *Enter up to six federal and state waste codes to describe each waste stream identified in Item 9b. State waste codes that are not redundant with federal codes must be entered here, in addition to the federal waste codes which are most representative of the properties of the waste.*	**Finding:** Chevron Hawaii did not include all waste codes on hazardous waste manifests that were most representative of the properties of the wastes. **Notes:** Chevron Hawaii did not include all necessary waste codes on the following four hazardous waste manifests (**Appendix M**): • 001777253 GBF, 8-2-13, hazardous waste, silver nitrate, EPA hazardous waste code D011 not listed. • 002080501 GBF, 10-16-13, mercury solid, EPA hazardous waste code D009 not listed. • 000652767 VES, 9-9-14, scale with mercury, EPA hazardous waste code D009 listed, EPA hazardous waste code K050 not listed (see discussion in area of noncompliance 5). • 000652936 VES, 6-22-15, exchanger sludge with mercury, EPA hazardous waste code D009 listed, EPA hazardous waste code K050 not listed.	**Appendix M** – Manifests Missing Waste Codes
7.	**HRS 11-262-42(a)(1) and (2) [40 CFR § 262.42(a)(1) and (2)]** – *(1) A generator of greater than one-thousand kilograms of hazardous waste in a calendar month who does not receive a copy of the manifest with the handwritten signature of the owner or operator of the designated facility within thirty-five days of the date the waste was accepted by the initial transporter must contact the transporter and/or the owner or operator of the designated facility to determine the status of the hazardous waste.* *(2) A generator of greater than one-thousand kilograms of hazardous waste in a calendar month must submit an Exception Report to the*	**Finding:** Chevron Hawaii did not call or submit a written exception report when it did not receive the signed manifest 000084617 DAT (**Appendix N**) within 35 or 45 days. **Notes:** The original shipment left the facility on September 25, 2013, and the signed copy of the manifest was dated November 15, 2013, a total of 51 days.	**Appendix N –** Manifest 000084617 DAT

Table 1. SUMMARY OF OBSERVATIONS
Chevron Products Company – Hawaii Refinery
Kapolei, Hawaii

#	Regulatory Citation	Findings/Supporting Notes	Evidence
	director if he has not received a copy of the manifest with the handwritten signature of the owner or operator of the designated facility within forty-five days of the date the waste was accepted by the initial transporter.		
8.	**HRS 11-262-42(a)(1) and (2) [40 CFR § 262.42(a)(1) and (2)] –** *(1) A generator of greater than one-thousand kilograms of hazardous waste in a calendar month who does not receive a copy of the manifest with the handwritten signature of the owner or operator of the designated facility within thirty-five days of the date the waste was accepted by the initial transporter must contact the transporter and/or the owner or operator of the designated facility to determine the status of the hazardous waste.* *(2) A generator of greater than one-thousand kilograms of hazardous waste in a calendar month must submit an Exception Report to the director if he has not received a copy of the manifest with the handwritten signature of the owner or operator of the designated facility within forty-five days of the date the waste was accepted by the initial transporter.*	**Finding:** Chevron Hawaii did not have signed copies from the treatment, storage, and disposal facility (TSDF) of the following hazardous waste manifests **(Appendix O)**, and no exception reporting was completed. **Notes:** 001777249 GBF 7-25-13 000654644 VES 4-29-14 000652854 VES 2-18-15	**Appendix O –** Manifests Without TSDF Signatures
9.	**HRS 11-268-7(a)(2) [40 CFR § 268.7(a)(2)] –** *If the waste does not meet the treatment standard: With the initial shipment of waste to each treatment or storage facility, the generator must send a one-time written notice to each treatment or storage facility receiving the waste, and place a copy in the file. The notice must include the information in column "11-268-7(a)(2)" of the Generator Paperwork Requirements Table in subsection (a)(4). No further notification is necessary until such time that the waste or facility change, in which case a new notification must be sent and a copy placed in the generator's file.*	**Finding:** Chevron Hawaii did not have copies of the LDR notifications on-site at the time of the NEIC inspection, nor were Chevron Hawaii personnel able to provide the LDR notifications following the inspection for the following manifests (**Appendix P**): **Notes:** 001777254 GBF 8-2-13, missing for waste profile number 477872 001777220 GBF 6-12-13	**Appendix P** – Manifests Missing Land Disposal Restriction Notifications

Table 1. SUMMARY OF OBSERVATIONS
Chevron Products Company – Hawaii Refinery
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#	Regulatory Citation	Findings/Supporting Notes	Evidence
POTENTIAL AREAS OF CONCERN			
A.	**Used Oil**	**Concern:** Chevron Hawaii needs to ensure that containers used to transport used oil from the field and shop areas are labeled as "Used Oil." **Notes:** Chevron Hawaii's maintenance shop generates used oil in the process areas when a pump is being prepared for service. The used oil is drained into portable containers ranging in size from 2 to 5 gallons. NEIC inspectors did not observe any containers containing used oil, labeled or not; however, no containers were designated for this function or were permanently labeled "Used Oil."	
B.	**Material Pending Analysis**	**Concern:** Chevron Hawaii personnel are not marking containers containing material pending analysis with "Hazardous Waste" labels when they believe that the material will exhibit a hazardous waste characteristic. **Notes:** Chevron Hawaii marks materials pending analysis with a "Pending Analysis" label, and these materials are stored in a designated area in the waste storage area. When Chevron Hawaii has process knowledge that indicates material may exhibit a hazardous waste characteristic, the container should be labeled as "Hazardous Waste" until the analytical results are received. On March 1, 2016, there were two containers pending analysis in the designated area.	**Appendix A** – NEIC Photographs (IMGP0063.jpg)
C.	**Less-Than-90-Day Accumulation Area Inspection Records**	**Concern:** Chevron Hawaii did not keep records for four weekly inspections of the less-than-90-day accumulation area. **Notes:** Chevron Hawaii was missing inspection records for the less-than-90-day accumulation area for the following weeks: February 17, 2013, July 15, 2013,	

Table 1. SUMMARY OF OBSERVATIONS
Chevron Products Company – Hawaii Refinery
Kapolei, Hawaii

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		July 29, 2013, and December 16, 2013. Alice Armstrong, Chevron Hawaii environmental specialist, stated that the inspections were conducted but no records were kept.	